

EXHIBIT A

Provisional Patent Application

Methods And Apparatus For Wireless Operational Management And Control Of Wired Networks

The methods and apparatus of the present invention relate to wired networks characterized by geographically widely separated and dispersed nodes, such as power utility networks, computer networks (WANs) and the like, and in particular, to a wireless operational management and control system.

Present technology does not permit real-time operational status of large wired networks to be known. Relying on human contacts and traditional infrastructure, operators of large wired networks are always in the "past" regarding the status of the system. When natural disasters occur, systems such as power distribution companies are often unable to identify the source and location of major breakdowns in the system until hours or days have passed, which can further damage the network and leave customers without vital services when they are most needed.

For the networks to which the present invention pertains, it is advantageous on a daily basis and under normal conditions to have real-time information of conditions at network nodes in order to maintain the system at peak efficiency. Under conditions of natural disasters (hurricanes, earthquakes, floods, etc.), it is vital to quick recovery and system integrity that essential conditions be known in real-time so that emergency measures and repairs can be timely initiated. The present invention provides real-time

information of conditions throughout a wired network independently of the functionality of the network itself.

The present invention operates through intelligent agents located at various nodes of the system where conditions need to be monitored and controlled. These intelligent agents monitor the stream of data that flows through the node and, based on predetermined parameters embedded in programmable software, send out signals digitally reporting preselected node conditions. These signals are transmitted over wireless communications links (satellites or paging relay facilities, for example). The signals can be transmitted to a central processing computer at which overall network operations are monitored in real-time and/or to individuals or organizations, such as those involved in disaster relief for whom such information can be critical.

In its two-way embodiment, the present invention not only provides real-time system operation data, but also provides a path for remote control of node functions on a manual and automated basis. When the invention reports conditions on the system that have been predetermined to need correction, the system responds automatically to signal the intelligent agents at the affected nodes, which, in turn, deliver signals to the node which results in changes made to the node operation. The invention also permits manual control for conditions that need corrective action, but which have not been pre-programmed to take place automatically.

Yet another embodiment of the invention includes the function of wireless electronic software distribution through the intelligent agents. A

system using all three embodiments of the invention is illustrated in Figure 1, where a plurality of computers 11a, 11b, ... 11n form a wired network with a server 12. Each computer 11a-11n has attached thereto a control module 13a-13n, respectively. Each module includes an intelligent agent that can, for example, detect whether the computer is on or off and report that condition over a wireless communication link 16. In addition, the modules 13a-13n can receive a signal that is relayed to the computer to turn it off or on. Attached to the server 12 is a software distribution module 14 of the present invention that also includes an intelligent agent and can wirelessly receive software for distribution to the server. From a remote location, using a satellite communication system 16, software can be distributed throughout the system. If necessary, the system can first be queried to determine which computers 11a-11n are off and need to be turned on, turning on those computers that are off and then transmitting the software via the module 14 and server 12.

The node monitors (including intelligent agent) have backup power capabilities so that they can automatically operate off the grid under conditions when the grid is not functioning.

The attached documents further disclose the advantages of the invention and, in particular, with regard to a Disaster Recovery System.

In one embodiment of the invention, intelligent agents are attached to cooling units having fans and compressors which are powered off the grid. When the grid needs relief from demand, all or selected cooling units can be powered down by turning off their compressors. Further relief is available by turning off the fans, as well. All of the cooling units on the grid, regardless of

how geographically dispersed, can be controlled from a central location via a wireless network in real-time to deal with conditions as they occur.

Those skilled in the art being apprised of the foregoing will appreciate that the invention is applicable to many different systems and that a wide variety of different applications are possible with the invention.

The Products

Overview

The Wireless Controller product line will initially be a number of devices that will provide different types of applications from notifications, monitoring and remote execution of application programs to power management control, catastrophe systems monitoring and mobile notifications.

All wireless controllers will communicate without having a physical connection to a computer network or telephone line. All controllers have battery backup and operate normally without power for an extended period of time.

Each device will have 3 major components:

- The Wireless Device
- The Wireless Device Host Application
- An Intelligent Agent

Wireless Controller 1 (PerfectAdvisor I)

This device will be capable of receiving wireless notification messages and commands that will be collected by the agent, which is incorporated into the target computer. This intelligent agent stores, processes and forwards commands from a master controller to configure the specific device wirelessly. In essence, this device provides configuration management on a wireless basis, without requiring connectivity to networks. It also provides problem determination for the respective devices and can distribute this information wirelessly, by forwarding reports to as many as eight binary points (including pagers of service personnel).

Wireless Controller 2 (PerfectAdvisor II)

In addition to PerfectAdvisor's capabilities, this model also has the capability of responding to commands to control AC power for up to two different devices (i.e. CPU and Monitor). In addition, it can contact up to eight binary points.

Wireless Controller 3 (PerfectAdvisor Plus)

This device will combine PerfectAdvisor II, with an added capability of wireless electronic software distribution (WESD) and version control and configuration management of the software.

By having these 3 controllers with separate functionality, we will be in a better position to provide the best product and services to our future customers.

Benefit of downloading software—to download, you don't have to wrap it or attach it to software; to properly install software, a proprietary specialized intelligent agent is used to explode software and install it properly on the workstation.

Attributes of the Perfect Advisor

- All versions are remotely programmable which prevents obsolescence of the system and the equipment.
- Provides wireless layer of communication independent of existing or other forms of communication.
- Functions on an unattended and automated basis and is remotely addressable.
- Receives control information, which agents can filter, creating customer designated information.
- Self-contained independent power source.
- Ability to be flexible to meet changing customer requirements.
- Can be easily integrated into other systems using other protocols.
- Can be installed onto and read meters or other monitoring devices.
- Provide notification to customers.
- No restriction or limits to upward scalability. (No limits to system size nor the number of monitors.)
- Can provide separate, distinct absolute communication security.
- Flexibility to remotely modify device programs, separately and independently (i.e. programmable).
- Capacity for broadcasting addressable messaging to a network, a designated group or individuals.
- System refreshes information within minutes.
- Can efficiently determine power on/off and send multiple reports unattended and fully automated.
- Can effect power on/off and re-boot machines using applicable protocol
- Capacity to build in alarm and notifications.
- Can monitor, control and interact with various types of equipment.
- Contains intelligent agent(s) for customer applications.
- Multiple addressability from various command centers.
- Management of catastrophic recovery on a centralized basis that can be structured for regional or local service personnel.
- Filters data streams and provides alarms or notifications to designated monitors, service centers, and individuals.

In addition to the One Way Version, the Two Way Version:

- Can include two way wireless communications.
- Ability to communicate information to outside entities such as FEMA, police, fire departments, private command centers and other emergency services.

Wireless Controller Technologies can customize the additional attributes you require and the applications for each of these attributes.

Wireless Controller Technologies, Inc.
Burlingame, Ca.

Disaster Recovery System

WCT (Wireless Controller Technologies, Inc.) products are designed to provide levels of wireless communication, diagnostic information, and immediate emergency response on an intelligent basis without the need for human intervention. The device and system contains intelligent agents which function as prescribed by the user to perform these tasks automatically and unattended. The system functions without the need for external power sources. The level of communication can be provided at several levels depending on the cost of the system. The system will interface with other systems through a multitude of language protocols, performing such functions as filtering data, providing error messages, and contacting customer designated, master control centers, groups and individuals (such as FEMA, Emergency command centers, recovery specialists, maintenance/repair crews). These activities can be performed through, paging transmissions, cell phones, hand held devices, and controller center servers or personal computers. The communication can also be accomplished through paging relay facilities or by satellite.

The system is designed to provide quick automated response to appropriate organizations and personnel to accomplish the following:

1. Determine what and where are the problems. How is this accomplished?
 - a. The system can interface with the SCADA system to filter the protocol messages for problem determination.
 - b. If the servers are out and there is no response the system can determine the outage and send notices to a master controller or multiple controllers through satellite or relay paging or both.
2. The system can be configured to match the geographic operating area of the utility and provide, if desired, contact with neighboring utilities. What does this accomplish?
 - a. The system works in concert with the disaster recovery structure providing continuous reporting of problems. The response time would be during and immediately after the disaster. These reports and notices can be broadcast to individual units, areas, and to monitoring centers.
 - b. The intent of the layout of the system is to provide resource management of the disaster team.
 - c. The system structured in such a manner can determine where the problems exist and if the SCADA system is still up to determine the nature of the problems.
 - d. Communication would come from the field to the control centers and the Utility would have continuous updating of recovery.
3. The system can be used for broadcast message and alerts to the customers. It could be programmed to provide these alerts on an automated basis or through active participation by the utility. What is the use of such broadcasts?
 - a. The most dangerous aspect of a hurricane in most instances can be flooding. The system could send alerts for impending weather problems before impact and immediately after impact, such as, the risk of flooding. The system can provide communication for block, or area, or total broadcast to the devices.
 - b. The system can be structured to include various levels of customer locations or as part of the overall customer base. In the later instance the system would determine and report whether power is on or off and report this to recovery facilities, central, or regional control, and to central monitors. The level of communication is only restricted by cost.

4. The WCT system has built in processes which can manage communication channels. What is the purpose of this?
 - a. During periods of extreme emergency, communications channels can, and in many cases, become overwhelmed with traffic. The system can prioritize messages and incorporates pacing algorithms that maintain information flow. We can also provide exclusive satellite channels which operate under total security and are exclusive for disaster recovery communications.
 - b. The system has incorporated automatic messaging facility, which will continue to communicate until the device is contacted or advise not to continue to attempt contact due to destruction or other causes. It has been designed to be as failsafe as one can accomplish subject to monetary restraints.
5. The system is designed to provide quick and ongoing problem determination. What advantages does the system provide compared to manual paging or cell phone communication?
 - a. We believe that secure rapid communication of outage and the nature of the problems on an organized, efficient basis is the only way to develop disaster recovery strategies. We can provide a separate secure satellite communication combined with intelligent devices that operate independent, automated, programmable, intelligent, and unattended responses to pinpoint problems, with which the utility and recovery personnel can make judgements taking action on a coordinated, efficient basis. It provides as much information as available about conditions without human intervention. This enables the utility to have better control of the disaster, without placing undue risk on customers and employees. It gives both the overall situations as well as local data. It communicates prior to, during, and after the event. It can provide the local of the problems and if the SCADA is still functioning specific error messages on the distribution problems. It can interface with any intelligent devices and be utilized for more efficient maintenance saving cost at all times. It is programmable remotely therefore extending its useful life as additional technologies become available.
 - b. The system will respond with power out and systems disabled.